

CIS 345, CMP 426 & CMP 697: Operating Systems Syllabus

Department of Computer Science
Lehman College, City University of New York

Course Information

Semester	Class Section	Class Hours	Room Number
Spring 2026	01-Lec	Tu & Th 12:00 PM - 1:40 PM	Gillet Hall 333

Instructor Information

Instructor	Email	Office Number	Office Hours
Steven Fulakeza	steven.fulakeza@lehman.cuny.edu	GI 232	- Tu & Th 3:50 pm to 5:50 pm - Tu 5:50 pm to 6:30 pm Online via Appointment using this link https://calendly.com/sfulakeza/15min

CMP 426 Course Description: 4 hours, 4 credits

Operating systems and their role in various types of computer systems; the principles of multiprogramming; algorithms for resource allocation; multiple-computer systems.

CMP 697 Course Description: 4 hours, 4 credits

A study of the functions and implementation of operating systems for various sizes and types of computers. Processor, storage, and device management. Paging algorithms, thrashing. File systems, concurrency, deadlocking, semaphores, and synchronization.

Prerequisites for CMP 426 and CMP 697:

- CMP 334 - Computer Organization
- CMP 338 - Data Structures and Algorithms

CIS 345 Course Description: 4 hours, 4 credits

Overview of operating systems (O.S.) from both a theoretical and a systems manager point of view. Process management and multitasking, memory management, resource management, file management, I/O management, command interpreter/shell, and shell scripts will be covered. Large networked systems will be discussed from a systems point of view. Prerequisites: **CMP 157, CMP 167, CIS 212**

Prerequisites for CMP 426 and CMP 697:

- CMP 157

- CMP 167
- CMP 212

Course Objectives:

At the end of the course, students should be able to:

1. use the command line to interact with the operating system
2. explain operating systems and their role in various types of computer systems
3. describe the basic structure of an operating system and its components
4. describe the concept of a process, threads and how processes deal with scheduling, cooperation, and communication with other processes
5. describe CPU scheduling algorithms and be able to compare them
6. explain the classical problems in process synchronization and know several different ways to solve such problems, including semaphores, critical regions, and monitors
7. explain how to characterize and handle deadlocks, including prevention, avoidance, detection, and recovery
8. understand main memory and virtual memory and describe several different schemes for managing main memory, including swapping, virtual memory, paging, and segmentation
9. describe file/storage management
10. discuss how disks are structured and how their space is managed by the operating system

Textbook:

- A. Silberschatz, P. Galvin, and G. Gagne, *Operating System Concepts*, 10th Edition, Wiley, 2018. ISBN 978-1-119-29967-7. We are using the zyBook version of this book. Below are the details for the zyBook
 - a. Sign in or create an account at learn.zybooks.com
 - b. Enter zyBook code: **CUNYCMP426-697FulakezaSpring2026**
 - c. Subscribe
- [Operating Systems: Three Easy Pieces](#) by Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau
This is not a required text but it is a good source for readings on material covered in class. The parts of this book are available online for free, you can get an e-copy for about \$10 or hard copies for a good price.

Operating System Concepts Textbook Website: [text book web site](#)

- <https://www.os-book.com/OS10/>

References:

- Lecture Notes, Brightspace, and Course Website

Course Website: <http://comet.lehman.cuny.edu/sfulakeza/>

Grading Policy:

CMP 426

Activity	Percentages
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Participation Activities from the textbook and Brightspace Multiple Choice Quizzes	10%
Homework Assignments	20%
Midterm Exam	32%
Final Exam	38%

CMP 697

Activity	Percentages
Participation Activities from the textbook and Brightspace Multiple Choice Quizzes	10%
Homework Assignments	20%
Midterm Exam	27%
Final Exam	33%
Research Paper and Presentation (for graduate students only)	10%

CIS 345

Activity	Percentages
Participation Activities from the textbook and Brightspace Multiple Quizzes	10%
Homework Assignments	20%
Midterm Exam	32%
Final Exam	38%

Grading Scale for CMP 426 and CIS 345:

Letter Grade	Ranges %
A	93 - 100
A-	90 - <93
B+	87 - <90
B	83 - <87
B-	80 - <83
C+	77 - <80

C	73 - <77
C-	70 - <73
D	60 - <70
F	< 60

Grading Scale for CMP 697:

Letter Grade	Ranges %
A	93 - 100
A-	90 - <93
B+	87 - <90
B	83 - <87
B-	80 - <83
C+	77 - <80
C	73 - <77
F	< 73

Make-up and Alternate Exams Policy:

Make-up exams will not be provided unless a student's absence is due to an unavoidable circumstance. In such cases, the student must submit a formal written request along with appropriate documentation to substantiate the reason for their absence.

All exams are scheduled to be taken in person on campus. If you are unable to attend the in-person exam, please consider enrolling in the course during a subsequent semester when your schedule permits.

Exam Schedule:

- Midterm Exam: Tuesday March 31, 2026
- Final Exam: Thursday 05/21/2026

The exams are scheduled to be in person on campus.

Final Exam Policy:

The final exam is comprehensive. If your score on the final exam is higher than your midterm exam score, the final exam score will replace the midterm exam score when calculating your final course grade. This substitution will be applied automatically during final grade calculations.

This policy does not apply to students who:

- are found to have committed academic dishonesty on any assignment, exam, or other course-related work, or
- did not take the midterm exam.

Homework Assignments and Submission

Several homework assignments are given during lectures. Students need to work on the homework for preparing for exams but may not need to submit the homework assignments to the instructor. **Some selected homework problems will be assigned as formal assignments to be submitted for grading.** All homework will be submitted through Brightspace or zyBooks.

Students must work on their own assignments unless otherwise stated.

No late assignments will be accepted. No emailed work will be accepted.

Homework assignments will include the following areas and more:

- Process creations/executions based on Linux/UNIX API and Win API
- Message based communications based on Linux/UNIX API
- Shared memory-based communications between processes based on Linux/UNIX API and WIN API
- Multithreading based on POSIX API, Win API, Java threads
- Java nexus IO (memory mapped IO), Windows memory mapped IO
- Synchronization based on UNIX System V API, POSIX API, Win API
- Linux kernel module programming/driver programming

Graduate Students Survey Research Paper - (For Graduate Students Only CMP 697):

Research Paper (12 - 15 pages double spaced in 12 fonts, Times Roman) in various contemporary research areas such as:

- Threading issues in Linux kernels
- Fast mutual exclusions
- Virtualization and cloud computing
- File systems in solid state devices
- In-memory file systems
- In memory DBMS

A survey paper is also known as a review paper. It is a type of academic document that provides a comprehensive and systematic overview of existing research literature in a particular field or on a specific topic. The ACM Computing Survey defines a survey paper as a paper that summarizes and organizes recent research results in a novel way that integrates and adds understanding to work in the field. A survey article assumes a general knowledge of the area; it emphasizes the classification of the existing literature, developing a perspective on the area, and evaluating trends."

The primary goal of a survey paper is to summarize, organize, and analyze the key findings, methodologies, and contributions of a collection of related research studies. A survey paper synthesizes existing knowledge to offer readers a consolidated understanding of a given subject.

- You can visit [ACM Computing Survey](#) to see examples on survey papers.
- Paper Proposal Due (**March 31, 2026**): 1 page including extended abstract with at least 5 references.
- Research Paper Due Date: **May 19th, 2025, by 11:59 pm**
- Research Paper Presentation Date: **May 19th, 2025 during class**

Survey Research Paper Structure:

1. Title, name, date, course number
2. Abstract: This is a summary that describes your entire paper. Your abstract should contain 150 - 300 words. You must write this last.
3. Introduction: Your introduction should provide the background problem you are researching.
4. Body of the paper and discussion
5. Conclusion that summarizes the paper and describes future work for the research
6. Acknowledgement (If necessary)
7. References: ACM = Association of Computing Machinery

Some details about research paper writing and presentation will be discussed during office hours.

Honor Code

You are encouraged to work together on the overall design of the programs and homework. However, for specific programs and homework assignments, all work must be your own. You are responsible for knowing and following Lehman's [academic integrity code](#) (available from the Undergraduate Bulletin, Graduate Bulletin, Office of Academic Standards and Evaluations, or the Smart Catalog).

All incidents of cheating will be reported to the Vice President of Student Affairs.

Expectations

Students are expected to learn the material covered in class, the material in the textbook and other assigned reading. Completing homework is an essential part of the learning experience. Students should review topics from prior courses as needed using old notes and books.

Brightspace & Communication

I will be communicating with you on a regular basis throughout the semester using the email address listed on Brightspace for this course. You are required to make sure that the email address on Brightspace is your current Lehman email address and you must check it on a regular basis. **There will be no acceptable excuse for missing an email announcement.**

Accommodating Disabilities

Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may need classroom accommodations are encouraged to register with the Office of Student Disability Services. For more information, please contact the Office of Student Disability Services in Shuster Hall, Room 238. Phone number: 718-960-8441, Email: disability.services@lehman.cuny.edu
Webpage: <http://www.lehman.edu/student-disability-services>

Course Outline:

Overview

Chapter 1: Introduction

Chapter 2: Operating-System Structures

Process Management

Chapter 3: Processes

Chapter 4: Threads and Concurrency

Chapter 5: CPU Scheduling

Process Synchronization

Chapter 6: Synchronization Tools

Chapter 7: Synchronization Examples

Chapter 8: Deadlocks

Memory Management

Chapter 9: Main Management

Chapter 10: Virtual Memory

Storage Management

Chapter 11: Mass-storage Structure

Classroom Policies

- Take responsibility for your education and grades – Students have a common myth that because they pay tuition, they deserve to receive a passing credit. Students earn grades in accordance with course grading policies.
- Attend every class and get to class on time.
- Submit all your work on time.
- When having any academic difficulties, always seek assistance from your instructor.

Java Programming Resources

- <https://www.tutorialspoint.com/java/index.htm>
- <https://codingbat.com/java>
- <https://practiceit.cs.washington.edu/>
- <https://www.learnjavaonline.org/>
- <http://www.pythontutor.com/java.html#mode=edit>

C Programming Resources

- <https://www.programiz.com/c-programming>
- <https://www.tutorialspoint.com/cprogramming/index.htm>
- <https://www.cprogramming.com/>

Other Resources

- [Computer Science from the Bottom Up](#)

Operating System Examples

- UNIX
- Linux
- MacOS

- Windows
- Android